

NEW, LITTLE KNOWN AND TYPICAL BERYCOID FISHES.

BY HENRY W. FOWLER.

The specimens used in the preparation of this paper are all contained in the collection of the Academy except when otherwise stated.

HOLOCENTHRIDÆ.

Myripristis jacobus Cuvier.

Hist. Nat. Poiss., III, 1829. p. 121. Martinique. (M. Achard.) Brésil (M. Delalande.) Havane. (M. Desmarest.)

Rhinoberyx chryseus Cope, Trans. Amer. Philos. Soc. Phila., XIV, 1871, p. 464, fig. St. Croix. (Thos. Davidson.)

Two examples, types of *Rhinoberyx chryseus* Cope.

Myripristis berndti Jordan and Evermann.

Bull. U. S. Fish Comm., 1902 (1903), p. 170. Honolulu. (U. S. Fish Comm.)

Myripristis murdjan Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 501. Sandwich Islands. (Dr. Benjamin Sharp.) (Not of Forskål.)

A co-type of *Myripristis berndti* Jordan and Evermann agrees with the example collected by Dr. Sharp. Two examples from Cocos Island, Galapagos Islands, collected by Messrs. Heller and Snodgrass, also appear to be the same species.

Myripristis murdjan (Forskål).

Sciæna murdjan Forskål, Descript. Animal., 1775, p. 48. Djiddæ.

Head $2\frac{5}{6}$; depth $2\frac{1}{4}$; D. X, I, 1, 12; A. IV, I, 11; P. I, 14; V. I, 5; scales 29 in lateral line to base of caudal, and 3 more continued on latter; about 9 scales before spinous dorsal, 3 between latter's origin and lateral line, and 6 between latter and origin of anal; width of head $1\frac{1}{2}$ in its length; mandible $1\frac{7}{9}$; first dorsal spine $3\frac{5}{8}$; second $2\frac{1}{3}$; third 2; eleventh $3\frac{2}{3}$; first developed dorsal ray $1\frac{2}{5}$; third anal spine $2\frac{2}{3}$; second developed anal ray $1\frac{3}{5}$; upper caudal lobe $1\frac{1}{4}$; pectoral $1\frac{1}{2}$; ventral $1\frac{1}{3}$; ventral spine 2; least depth of caudal peduncle $3\frac{5}{8}$; snout $4\frac{2}{3}$ in head measured from its tip; eye $2\frac{1}{3}$; maxillary $1\frac{3}{4}$; interorbital space $5\frac{1}{4}$.

Body deep, compressed, and greatest depth near tip of ventral spine. Upper profile from tip of snout to middle of dorsal evenly convex. Greatest width of body not equal to that of head. Caudal peduncle small, compressed, and its depth about equal to its length.

Head large, obtuse in front, its depth greater than its length. Snout

steep, broad, obtuse, incised in front, and with a similar shaped upper jaw projecting. Eye large, high, and almost impinging on upper profile. Mouth superior, oblique, and gape reaching about opposite nostril. Maxillary large, broadly expanded distally till $1\frac{2}{3}$ in eye, and reaching a little beyond its center. Jaws strong, and heavy mandible protruding when mouth is closed. Only lower lip developed, laterally thick and fleshy. Teeth in jaws fine, in broad bands, those in outer series short, enlarged, and truncate. At symphyseal knob of mandible conspicuous patches of such teeth, those on dental surface well separated, and others also on lower surface of each ramus. Tongue broad, pointed, and free. Suborbital rim narrow. Nostril large, vertical, close to front of and midway in height of orbit. Interorbital space rather narrow, slightly convex, and with two broad flattened longitudinal ridges. Opercle with a strong spine. Margins of bones of head serrate.

Gill-opening deep, extending forward below front margin of eye. Rakers long, slender, compressed, longest longer than filaments or about $2\frac{1}{2}$ in orbit. Pseudobranchiæ longer than filaments, nearly equal to diameter of pupil. Branchiostegal rays large, broad at bases. Isthmus short, and membrane with narrow fold across.

Scales large, strongly ctenoid, and rather narrowly imbricated on side. Scales along bases of dorsal and anal spinescent, but not extending on fins. Caudal covered with small scales, except margins. Base of pectoral with small scales. Ventral without scales except pointed axillary scale. No flap between bases of these fins. Opercles and cheek scaly, in 4 rows on latter, and rest of head naked. Lateral line concurrent with margin of basal scales of dorsal, then obliquely down across upper side of caudal peduncle to middle of base of caudal.

Origin of spinous dorsal beginning a little behind that of pectoral, heteracanthous, and graduated down from fifth to penultimate, which is shortest. Soft dorsal inserted a little in advance of origin of soft anal, its first developed ray longest, and margin of fin straight from this to last which is shortest, or about $\frac{1}{3}$ its length. Third anal spine larger, though shorter than fourth. Soft anal like soft dorsal, second developed ray longest, and last about $2\frac{2}{3}$ in its length. Caudal deeply forked, with pointed lobes. Pectoral small, and inserted over ventral. Ventral large, spine straight and reaching about half way, and rest of fin reaching about $\frac{3}{4}$ of distance to origin of anal.

Color when fresh in arrack rosy-red, deeper above. Base of spinous dorsal pale rosy-red, and upper margin broadly pale orange-yellow.

Base of soft dorsal pale rosy-red, also same of anal and caudal. First and second rays of soft dorsal and anal, also outer caudal rays, pale gray or dull white. Tips of anterior dorsal and anal rays just behind pale edge, also tips of caudal lobes, blackish. Other fins more or less pale orange. Pectoral and ventral pale rosy, latter with a whitish margin. Axil of pectoral deep brown. Upper edge of opercle deep blackish-brown. Iris with a broad deep brown vertical band continuous below. Peritoneum black.

Length $8\frac{1}{2}$ inches.

A single example from Padang, Sumatra. Coll. A. C. Harrison, Jr., and Dr. H. M. Hiller.

According to Rüppell¹ and Day² the iris is marked with a rather large broad black vertical bar. Bleeker has described a form which he identified with *M. murdjan*,³ but no mention is made of this ocular bar, or is it shown on his figure. Dr. Günther has indicated a dark blotch on the upper part of the iris in his.⁴

Myripristis chryseres Jordan and Evermann.

L. c., p. 171. Hilo, Honolulu. (U. S. Fish Comm.)

Co-type of *Myripristis chryseres* Jordan and Evermann with a rather large dark blotch on iris above pupil. Dr. Günther's figure of *M. murdjan*⁵ is probably this species, though it differs in the dark spot above pectoral axil. It also shows about 35 scales in lateral line to base of caudal.

Myripristis argyromus Jordan and Evermann.

L. c., p. 172. Hilo, Honolulu. (U. S. Fish Comm.)

Myripristis murdjan Fowler, *l. c.*, p. 501. Sandwich Islands. (Dr. J. K. Townsend.) (Not of Forskål.)

The example in Dr. Townsend's collection appears to belong to this species.

HOLOTRACHYS Günther.

Journ. Mus. Godef. (Fische der Südsee), III, 1874, p. 93 (*lima*).

Holotrachys lima (Valenciennes).

Myripristis lima Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 371. Isle-de-France. (M. Dussumier.)

One from Hawaiian Islands. Dr. J. K. Townsend.

¹ *Atlas zu der Reise im nördlichen Afrika, Fisch.*, 1828, p. 86, Pl. 23, fig. 2.

² *Fishes of India*, II, 1876, p. 170, Pl. 41, fig. 2.

³ *Nat. Tijds. Ned. Ind.*, IV, 1853, p. 109. Amboina.—*Ned. Tijds. Dierk.*, IV, 1874, p. 188. Java; Cocos; Batu; Celebes; Amboina; Ceram; Goram.

⁴ *Journ. Mus. Godef.* (Fische der Südsee), IV, 1875, Pl. 61.

⁵ *L. c.*

HOLOCENTHRUS Scopoli.

The original orthography, though erroneous, cannot altogether be considered an unintentional misprint, as its occurrence is but twice in the entire work and in each case it is spelled exactly as above.

Subgenus **HOLOCENTHRUS** Scopoli.

Margin of opercle finely serrated.

Holocentrus adscensionis (Osbeck).

Perca adscensionis Osbeck, Reis. Ostind. Chin., 1765, p. 388. Ascensionsinsul.

An adult example from Rio Janeiro, Brazil, agrees with others from the Bahamas. In former preopercular spine reaches a trifle beyond gill-opening, and its upper free margin is about equal to half of orbit. Pectoral $1\frac{1}{2}$ in head, from tip of snout to tip of opercular spine. Third anal spine, from scales, $2\frac{1}{10}$. Soft dorsal $1\frac{1}{2}$. Ventrals falling well short of vent. Length $11\frac{1}{2}$ inches.

Three smaller examples from San Domingo differ in a larger eye, longer pointed fins, and long opercular spine reaching base of pectoral. They also have a more slender caudal peduncle. Prof. W. M. Gabb collection.

The form called *rufus* by Drs. Jordan and Evermann is evidently the same.

Mr. W. J. Fox has called attention⁶ to the original spelling of the specific name of this species which has been ignored by writers.

Holocentrus xantherythrus (Jordan and Evermann).

Holocentrus xantherythrus Jordan and Evermann, Bull. U. S. Fish Comm., 1902 (1903), p. 175. Honolulu. Kailua.

Co-type of *Holocentrus xantherythrus* Jordan and Evermann.

Holocentrus gladispinis sp. nov. Fig. 1.

Holocentrus diploxiphus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 520. Tahiti. (Dr. J. K. Townsend.) (Not of Günther.)

Head 3; depth 3; D. XI, 13; A. IV, 9; P. I, 14; V. I, 7; scales 44 in lateral line to base of caudal, and 4 more on latter; $3\frac{1}{2}$ scales obliquely back from origin of spinous dorsal to lateral line, and 3 in vertical series between last dorsal spine and lateral line; 7 scales obliquely back from lateral line to middle of belly; width of head 2 in its length; depth of head at posterior margin of orbit $1\frac{1}{3}$; snout $4\frac{2}{5}$; orbit $2\frac{9}{10}$; maxillary $2\frac{9}{10}$; mandible $2\frac{1}{15}$; interorbital space $3\frac{1}{4}$; first dorsal spine $3\frac{1}{2}$; third 2; second dorsal ray 2; third anal spine $1\frac{3}{5}$; second anal ray 2; least depth of caudal peduncle $3\frac{2}{3}$; upper caudal lobe $1\frac{1}{3}$; pectoral $1\frac{1}{3}$; ventral $1\frac{3}{5}$.

⁶ *Science*, 1900, p. 717.

Body moderately elongate, compressed, greatest depth about middle of depressed ventral, and upper profile a little more convex than lower. Caudal peduncle compressed, and its least depth $1\frac{7}{8}$ of length.

Head somewhat large, compressed, and upper profile steep, more convex than lower. Snout short, broad, convex, upper jaw projecting a little. Eye large, impinging on upper profile, anterior, and circular. Mouth rather small, jaws about even, projecting, and gape reaching about opposite front of posterior nostril. Maxillary small, slipping below narrow preorbital, beyond front rim of pupil or about first third of orbit, and its distal expansion a little less than diameter of pupil. Teeth minute, pointed, numerous, in bands in jaws, and on palatines.

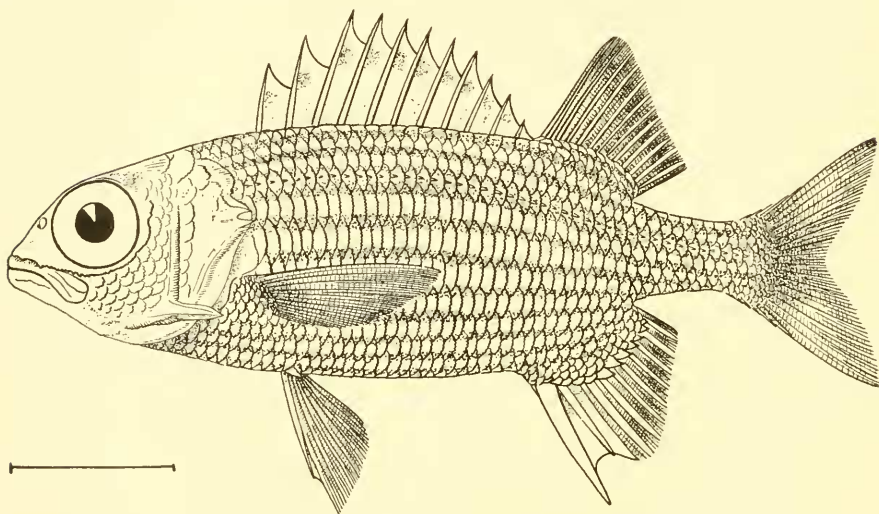


Fig. 1. *Holocentrus gladiuspinis* Fowler.

A small patch also on vomer. Tongue attenuate, long, free and smooth. Nostrils adjoining, and close to front rim of orbit, anterior inconspicuous and posterior a large cavity. Interorbital space broad, slightly concave medianly, and with a low obsolete ridge laterally. Head with many fine denticles along edge of cranial bones. Preorbital denticulate, with a large blunt spine in front. Opercle ending in two small spines of equal size. Preopercle armed below at its angle with a broad dagger-like spine equal to $\frac{1}{2}$ of orbit, along its upper margin, and reaching beyond gill-opening.

Gill-opening extending forward opposite middle of orbit. Rakers $v\ 2 + 9\ iii$, longest shorter than filaments which equal diameter of

pupil. Pseudobranchiæ large. Isthmus not trenchant, branchiostegal membrane forming a short free fold across.

Scales moderately small, finely spinescent, and those on side just below lateral line largest and imbricated somewhat narrowly. Scales at base of spinous dorsal forming a sheath and each one ending in a backwardly directed spine. Scales along base of soft dorsal not enlarged, rather low. Median scales at base of soft anal elongate and pointed. Bases of caudal and pectoral with small scales. A scaly flap between bases of ventrals and each fin with a broad pointed axillary scale. A series of five scales between orbit and base of preopercular spine. A few scales on opercle, and with exception of occiput head otherwise naked. Lateral line concurrent with dorsal profile till near caudal peduncle, along side of which it extends a little high at first till middle of base of caudal, though not extending on scales of that fin.

Spinous dorsal inserted over origin of pectoral, third spine longest, also next two nearly subequal. First spine a little longer than ninth, but eleventh shortest and joined to first dorsal ray by a low membrane. Margin of fin deeply notched. Soft dorsal posterior, inserted nearer base of caudal than origin of pectoral, elevated anteriorly, margin above straight, and first developed ray longest. Spinous anal inserted a trifle before origin of soft dorsal, first spine minute, third long, enlarged, reaching tip of rayed fin, and fourth shorter but next in size. Soft anal similar to rayed dorsal. Caudal forked and lobes pointed. Pectoral rather long, slender, and upper rays longest. Ventral inserted a little posterior, altogether behind base of pectoral, and reaching about two-thirds of distance to anal. Ventral spine slender, a little over two-thirds length of fin. Anus close in front of anal.

Color in alcohol faded brassy-brown with many silvery reflections. Above lateral line three longitudinal pale whitish bands along each series of scales. Below seven similar bands, those just below lateral line broadest. Fins plain-colored like general body-color. Spinous dorsal just above middle with a small white blotch behind each spine. Iris straw-colored. Peritoneum silvery.

Length $5\frac{3}{8}$ inches.

Type No. 14,140, A. N. S. P. Tahiti. Dr. J. K. Townsend.

A single example. This species is closely related to *Holocenthrus diploxiphus* (Günther). Dr. Günther's figure⁷ shows about 3 scales between origin of spinous dorsal and lateral line, obliquely back, apparently about 43 in lateral line to base of caudal, ventral shorter,

⁷ *Proc. Zool. Soc. London*, 1871, p. 660, Pl. 60 (upper figure). Samoa Islands. (Coll. Godeffroy.)

third anal spine longer, a dusky blotch below base of soft dorsal, upper caudal lobe longer, and no longitudinal alternate dark and pale bands on side.

(*Gladius*, knife; *spina*, spine.)

Holocentrus gracilispinis sp. nov. Fig. 2.

Holocentrus diploxiphus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 501. Sandwich Islands. (Dr. J. K. Townsend.) (Not of Günther.)

Head 3; depth 3; D. XI, 13; A. IV, 9; P. I, 14; V. I, 7; scales 47 in lateral line to base of caudal, also several more continued on latter; $3\frac{1}{2}$ scales obliquely back from origin of spinous dorsal to lateral line; about 8 scales obliquely forward from origin of spinous anal to lateral line;

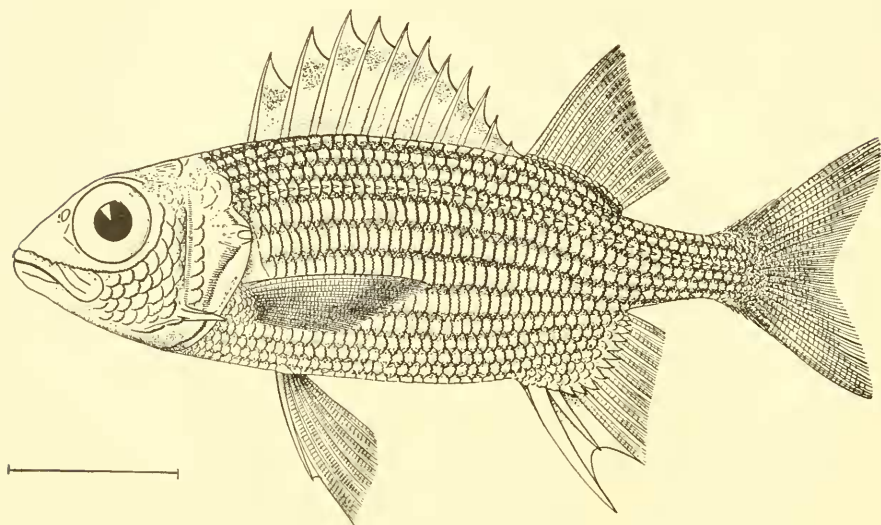


Fig. 2. *Holocentrus gracilispinis* Fowler.

3 scales between middle of spinous dorsal basally and lateral line; width of head $1\frac{5}{6}$ in its length; depth of head $1\frac{2}{7}$, over posterior margin of eye; snout 4; eye $2\frac{7}{8}$; maxillary $2\frac{3}{5}$; mandible $2\frac{1}{8}$; interorbital space $3\frac{1}{2}$; third dorsal spine $1\frac{2}{3}$; first $2\frac{1}{2}$; second dorsal ray $1\frac{3}{5}$; third anal spine $1\frac{2}{7}$; first anal ray $1\frac{3}{5}$; least depth of caudal peduncle $3\frac{2}{6}$; pectoral $1\frac{1}{4}$; ventral $1\frac{2}{5}$.

Unless otherwise stated, all of the characters noted under *H. gladi-spinis* apply equally to this species.

Profiles of body apparently more evenly convex anteriorly. Caudal peduncle compressed, and its least depth about half of its length. Upper profile of head more like lower than in *H. gladi-spinis*. Snout a

little large. Interorbital space a trifle narrow. Posterior nostril rather large. Obsolete lateral ridge along each side of interorbital space. A rather narrow dagger-like preopercular spine equal to about $\frac{2}{3}$ of orbit, along its upper margin. Rakers III 2 + S III, longest nearly equal to diameter of pupil. Scales small. Third and fourth dorsal spines longest, subequal, fifth a little shorter. Caudal lobes damaged, their length about equal.

Length $5\frac{1}{2}$ inches.

Type No. 27,271, A. N. S. P. Honolulu, Hawaiian Islands. U. S. Fish Commission (No. 14,233).

Three examples. This is the northern representative of *Holocentrus diploxiphus* (Günther), apparently differing in the slender preopercular spine, even caudal lobes, larger ventral and comparatively shorter third anal spine.

(*Gracilis*, slender; *spina*, spine.)

Holocentrus polynesiae sp. nov. Fig. 3.

Holocentrus pacilopterus Fowler, Proc. Acad. Nat. Sci. Phila., 1899, p. 485.
Thornton Island, South Pacific (wrongly ascribed to Caroline Islands).
(C. D. Voy.)

Head $2\frac{3}{4}$; depth 3; scales 49 in lateral line to base of caudal; 4 scales

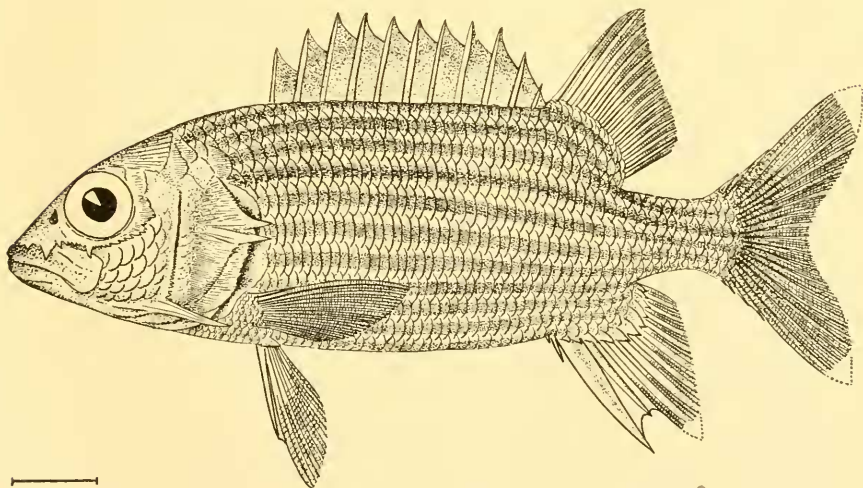


Fig. 3. *Holocentrus polynesiae* Fowler.

obliquely back from origin of spinous dorsal to lateral line; 3 scales between middle of spinous dorsal and lateral line; about 6? series of scales vertically between lateral line and middle of belly; width of

head about $2\frac{1}{4}$ in its length; depth of head about $1\frac{2}{5}$; snout about $3\frac{2}{5}$; eye about 4; maxillary (from tip of premaxillary) about $2\frac{3}{4}$; mandible $2\frac{1}{8}$; interorbital space about $5\frac{2}{5}$; first dorsal spine about 5; third about 3; third dorsal ray about $2\frac{1}{5}$; third anal spine about $1\frac{9}{10}$; second anal ray about 2; least depth of caudal peduncle about $3\frac{2}{5}$; pectoral about $1\frac{2}{5}$; ventral about $1\frac{3}{4}$.

Body moderately elongate, compressed, and apparently of somewhat ovoid form with profiles more or less similarly convex. Greatest depth apparently near middle of spinous dorsal. Caudal peduncle compressed, and its least depth about $\frac{2}{3}$ its length.

Head large, upper profile more or less straight, and more inclined than lower. Snout rather short, a little broad, convex above, and upper jaw a little protruded. Eye rather small, high, impinging on upper profile, circular, and anterior. Mouth small, jaws apparently even when closed, projecting, and gape falling a little short of posterior nostril. Maxillary rather small, apparently reaching middle of pupil, and distal expanded extremity about $\frac{1}{4}$ of orbit. Teeth minute, in rather broad villose bands in jaws and on palatines. A small triangular patch also on vomer. Nostrils adjoining, close in front of eye a little above, anterior obsolete, and posterior a large cavity. Interorbital space rather narrow, nearly level, only slightly concave, and with a low obsolete ridge laterally. Head with many small denticles along edges of bones. A double-pronged nasal spine in front of snout. Preorbital denticulate, with a large broad spine in front, immediately followed by a smaller curved one. A curved backwardly directed spine on narrow infraorbital. Postorbital rim also denticulate, and a little broader. Opercle ending in two rather small spines, upper a little longer. Preopercle armed below with a long and rather narrow spine, slightly curved at its extremity, and equal to $\frac{9}{10}$ of orbit, along its upper edge. It also reaches a little beyond gill-opening. Serræ along margin of preopercle becoming a little enlarged below.

Gill-opening apparently extending forward till opposite middle of orbit.

Scales small, and narrowly imbricated, those forming along base of spinous dorsal not spinescent. Rather small scales along base of soft dorsal. Greater basal region of caudal covered with small scales. Base of pectoral also with small scales. A rather short broad scaly flap between bases of ventrals, and each axilla of same fins with a short scale. Five series of scales on cheek. A row of rather broad scales along margin of preopercle on opercle. Except occiput, and otherwise stated, head naked. Lateral line at first more or less concurrent with

dorsal profile, and posteriorly running a little high along side of caudal peduncle to base of caudal, but not extending on base of fin.

Spinous dorsal inserted nearly opposite origin of pectoral, fin rather low, margin notched, first and tenth spines about equal, last shortest, and third to fifth subequal and longest. Membrane connecting dorsals distinct. Soft dorsal inserted nearer base of caudal than origin of pectoral, and elevated in front. Spinous anal apparently inserted a little behind origin of soft dorsal, third spine longest, broad, and not extending as far as tip of second anal ray. Fourth anal spine slender. Second anal ray apparently longest, first but little shorter. Caudal forked, damaged. Pectoral somewhat small, upper rays longest. Ventral apparently inserted behind pectoral, rather broad. Spine about $1\frac{3}{4}$ in fin.

Color of dried skin straw-brown. About 3 olivaceous longitudinal bands parallel with and above lateral line. Six others of same color longitudinally below lateral line. They are all rather broad, spaces between but little narrower than their own width. Fins and iris dull brown like general body-color.

Length 11 inches.

Type No. 23,277, A. N. S. P. Thornton Island, Polynesia. C. D. Voy. Presented by Prof. E. D. Cope.

Three examples. This species apparently approaches *Holocentrus poecilopterus* (Bleeker), but differs in color, as there are no traces of spots on spinous dorsal.

(*Ηολόεντς*, many; *νησίος*, island; Polynesia.)

Holocentrus thorntonensis sp. nov. Fig. 4.

Holocentrus microstomus Fowler, Proc. Acad. Nat. Sci. Phila., 1901, p. 325. Thornton Island. South Pacific. (C. D. Voy.) (Not of Günther.)

Head $2\frac{3}{4}$; depth 3; D. XI, 12?; A. IV, 7; scales 37 in lateral line to base of caudal; $3\frac{1}{2}$ scales between origin of spinous dorsal and lateral line; 3 scales between middle of spinous dorsal and lateral line; 7 scales below lateral line to middle of belly in a vertical series; snout $4\frac{1}{2}$ in head; eye $2\frac{2}{3}$; maxillary $2\frac{1}{8}$; interorbital space 3; third dorsal spine $2\frac{1}{16}$; third anal spine 2; least depth of caudal peduncle 4; pectoral $2\frac{1}{8}$; ventral $1\frac{3}{4}$.

Body elongate, rather ellipsoid, profiles about evenly convex and greatest depth near front of spinous dorsal. Caudal peduncle compressed, its least depth about $\frac{2}{7}$ its length.

Head deep, compressed, upper profile a little more convex than lower. Snout short, broad, forming a sharp protruding point in front. Eye large, circular. Mouth small, well inferior. Maxillary small,

oblique, reaching near middle of pupil. Preorbital rim narrow, with coarse serrations. Margin of preopercle coarsely serrated. Opercle with a strong spine above, the one just below but little shorter. Preopercle with a strong spine reaching beyond gill-opening, but not quite opposite base of pectoral. Nostrils small, without spines. Interorbital space broad, flattened, the supraocular ridge formed on each side sharp.

Gill-opening large, extending forward about opposite front margin of pupil.

Scales large, spinescent, those on middle of side rather narrowly im-

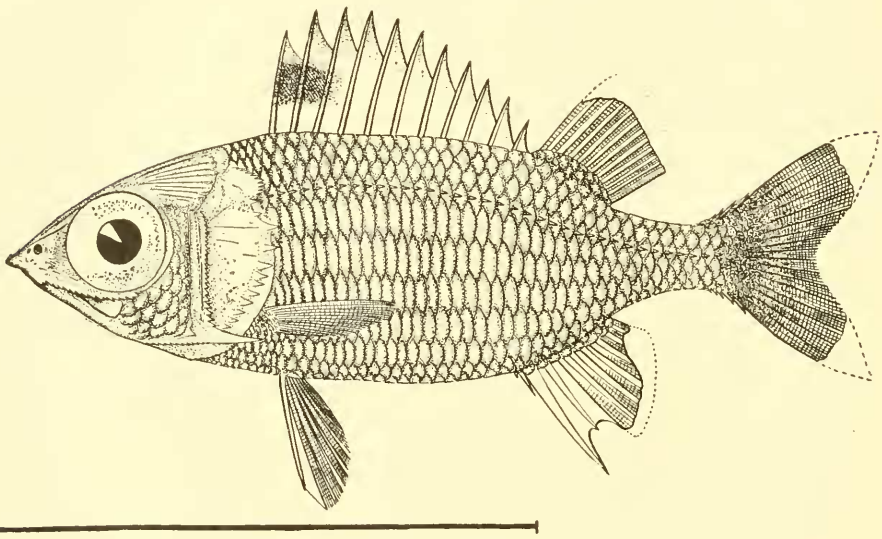


Fig. 4. *Holocentrus thorntonensis* Fowler.

bricated. Four or five rows of scales on cheek extending up on post-ocular region, head otherwise naked. Bases of soft dorsal and anal scaly, line of demarcation distinct on fins. Base of caudal scaly, scales extending well out and becoming smaller. Lateral line forming an even convex curve, more or less parallel with dorsal profile. Tubes simple. Base of ventral with small scaly flap.

Spinous dorsal inserted about opposite origin of ventral, third spine longest, first and fifth of about equal length, and others all graduated down, last very small. Soft dorsal inserted behind origin of spinous anal, small. Third anal spine longest, rayed fin small. Caudal forked. Pectoral small, low, inserted a little before spinous dorsal. Ventral

reaching $\frac{4}{7}$ of space to spinous anal, spine about $\frac{1}{3}$ length of fin. Anus close to origin of anal fin.

Color in alcohol brassy-silvery, brownish above lateral line and on upper surface of head. Pale longitudinal lines on trunk about ten, three above lateral line. Fins all pale, upper marginal portion of spinous dorsal between first and fourth spines dusky-brown.

Length $1\frac{9}{16}$ inches.

Type No. 23,769, A. N. S. P. Thornton Island, South Pacific. C. D. Voy. Presented by Prof. E. D. Cope.

A single example, described above. It is in the *Rhynchichthys* stage and does not seem to be the young of any known species. It appears closely related to *Holocentrus binotatus* (Quoy and Gaimard), but differs in the more slender body, fewer anal rays, dark blotch on the upper anterior portion of spinous dorsal, and more scales in the lateral line. It is also different from *Holocentrus brachyrhynchus* (Bleeker).

(Named for Thornton Island, formerly Caroline Island, Lat. $10^{\circ} 0' 01''$ S., Long. $150^{\circ} 14' 30''$ W., in Polynesia.)

***Holocentrus siccifer* (Cope). Fig. 5.**

Holocentrum sicciferum Cope, Trans. Am. Philos. Soc. Phila., XIV, 1871, p. 465. New Providence, Bahamas. (Dr. H. C. Wood.)

D. XI, 14; P. I, 14; V. I, 7; $3\frac{1}{2}$ scales between origin of spinous dorsal and lateral line; 3 scales between middle of spinous dorsal and lateral line; 7 scales between lateral line and anus; snout 5 in head, from its own tip to end of opercular spine; interorbital space $3\frac{1}{8}$; maxillary 3; fourth dorsal spine $2\frac{1}{5}$; fourth dorsal ray 2; third anal ray $1\frac{2}{3}$; least depth of caudal peduncle 4; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{2}$; width of head $1\frac{9}{10}$; depth of head over posterior margin of eye $1\frac{1}{3}$.

Body rather ellipsoid, profiles similar, and greatest depth about midway in length of trunk. Caudal peduncle compressed, its least depth $1\frac{3}{4}$ in its length.

Head robust, rather deep, and compressed. Upper jaw protruding a little beyond broad and convexly rounded snout. Eye large, impinging on upper profile, circular. Mouth small, a little oblique, when closed mandible a trifle inferior. Rather broad bands of minute villiform teeth in jaws. Tongue slender, pointed, and free. Nostrils without spines, close to upper front margin of orbit. Interorbital space broad, flattened. Margin of preopercle finely serrate, upper free edge of spine about $\frac{3}{4}$ of pupil.

Gill-opening extending opposite front margin of pupil. Rakers moderate, shorter than filaments. Pseudobranchiæ large.

Scales large, those along middle of side narrowly imbricated. Five

rows of scales on cheek. Small scales crowded at bases of soft dorsal and caudal. Scales along base of spinous dorsal each with a small spine directed back. A pointed scale at base of ventral. Lateral line more or less concurrent with dorsal profile, extending a little high on caudal peduncle to middle of base of caudal.

Spinous dorsal inserted a little in advance of origin of pectoral, fourth spine longest, first and ninth of about equal length. Margin of fin notched. Soft dorsal inserted a little behind origin of spinous anal. Third anal spine longest, enlarged. Pectoral low. Ventral

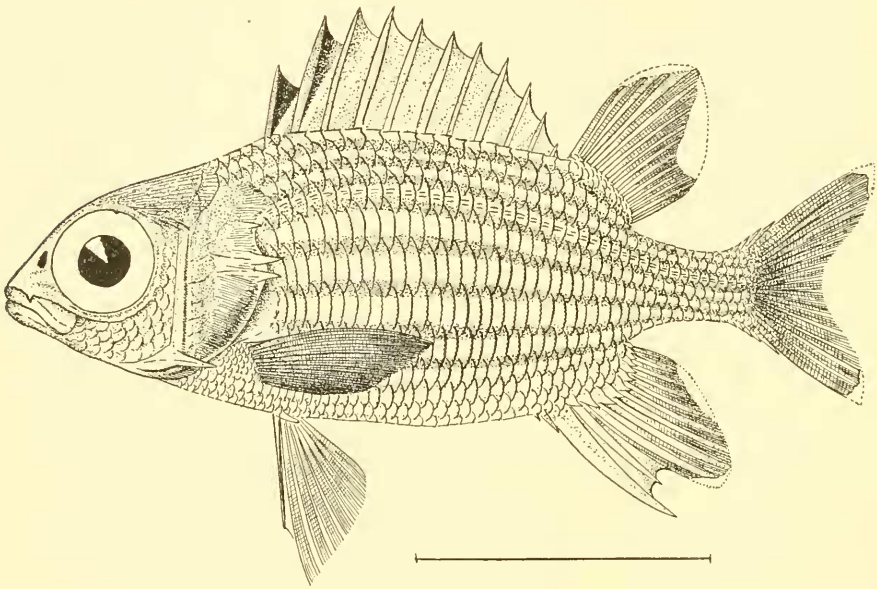


Fig. 5. *Holocentrus siccifer* (Cope).

pointed, inserted a little behind pectoral, and spine about $\frac{2}{3}$ length of fin. Caudal forked.

Color in alcohol pale brownish with silvery reflections. After brownish blotch on spinous dorsal a white submarginal spot on each membrane between spines. Pale or dusky oblique shades extending up from below on each membrane between spines. Other fins all pale like general body-color. Iris brownish.

Length $3\frac{1}{4}$ inches.

No. 14,138, A. N. S. P. Type of *Holocentrum sicciferum* Cope. New Providence, Bahamas. Dr. H. C. Wood.

Holocentrus albo-ruber (Lacépède).

Holocentrus albo-ruber Lacépède, Hist. Nat. Poiss., IV, 1803, pp. 333, 372.
Les eaux de la Chine.

Two examples, one in the Museum of Stanford University. Padang, Sumatra. Coll. A. C. Harrison, Jr., and Dr. H. M. Hiller. After comparison with the example described by Dr. Jordan and myself, taken at Okinawa, Riukiu,⁸ I am unable to find any specific differences. They agree in every respect, and the dark bands are still well preserved. Bleeker's figure⁹ does not exactly agree, as but one large distinct opercular spine is shown, and the outer half of the ventral is lavender-color. Dorsal also differently colored, as these examples are all with more or less blackish. Depth $2\frac{3}{5}$. Scales on cheek in 4 series. Third anal spine a little shorter than anterior anal rays. Soft dorsal without a spine. Larger example 6 inches.

Rüppell's figure of *Holocentrus ruber*¹⁰ is certainly different. It shows the third anal spine longer than the rest of the fin, and a median narrow gray longitudinal bar on spinous dorsal for its entire length.

Holocentrus ensifer (Jordan and Evermann).

Holocentrus ensifer Jordan and Evermann, Bull. U. S. Fish Comm., 1902 (1903), p. 176. Honolulu. Kailua. (U. S. Fish Comm.)

Co-type of *Holocentrus ensifer* Jordan and Evermann. Two small spines on border of anterior nostril, therein differing from other species mentioned in this paper.

SARGOCENTRON subgen. nov.

Type *Holocentrum leo* Cuvier.

Margin of preopercle coarsely serrated. Size large.

(Σάργος, an old name of *Diplodus*, one of the *Sparidæ*; κέντρον, spine.)

Holocentrus leo (Cuvier).

Holocentrum leo Cuvier, Hist. Nat. Poiss., III, 1829, p. 152. Borabora. (MM. Lesson et Garnot.)

Holocentrus spinifer Fowler, Proc. Acad. Nat. Sci. Phila., 1899, p. 483. Thornton Island, South Pacific (wrongly ascribed to Caroline Islands). (C. D. Voy.)—L. c., 1900, p. 526. Samoa. (Dr. H. C. Caldwell.) (Not of Forskål.)

Head $2\frac{3}{5}$; depth $2\frac{3}{5}$; scales 43 in lateral line to base of caudal; 4 scales between origin of spinous dorsal and lateral line obliquely back; $3\frac{1}{2}$ scales between middle of spinous dorsal and lateral line; 8 scales obliquely forward from origin of spinous anal to lateral line; depth of head at beginning of scales on occiput $1\frac{1}{6}$ in its length; width of

⁸ Proc. U. S. Nat. Mus., XXVI, 1902, p. 15.

⁹ Atlas Ichth., VIII, 1878, Pl. (3) 357.

¹⁰ Atlas zu der Reise im nördlichen Afrika, Fisch., 1828, Pl. 22, fig. 1.

head $2\frac{1}{2}$; snout $3\frac{1}{6}$; eye $3\frac{5}{6}$; maxillary $2\frac{2}{3}$; mandible 2; first dorsal spine $3\frac{1}{6}$; third 2; third dorsal ray $1\frac{9}{10}$; third anal spine 2; second anal ray about 2; upper caudal lobe about $1\frac{1}{2}$; least depth of caudal peduncle $3\frac{1}{3}$; pectoral $1\frac{2}{3}$; ventral $1\frac{2}{3}$; interorbital space 2 in orbit.

Least depth of caudal peduncle about $\frac{2}{3}$ of its length. Snout rather long, compressed a little, and upper jaw projecting. Eye touching upper profile. Jaws projecting a little, when open lower protrudes a little. Distal expanded end of maxillary about $\frac{4}{7}$ of orbit. Bands of minute teeth in jaws, on vomer and palatines. Nostrils together, anterior obscure, and posterior a deep cavity, its vertical diameter nearly equal to pupil. Interorbital space nearly level, with two distinct ridges. Preopercular spine reaches beyond gill-opening till nearly opposite origin of pectoral, and a little curved. Two nasal prongs. Gill-opening extending forward about opposite middle of eye. Scales well imbricated. Scales along basal sheath of spinous dorsal hardly denticulate posteriorly. Five series of scales on cheek, a series of broad ones along posterior margin of preopercle, and with exception of occiput, head otherwise naked. Small scales on bases of pectoral and caudal, extending well out on lobes of latter. Lateral line not extending on base of caudal. Margin of spinous dorsal hardly notched. Soft dorsal inserted a little nearer base of caudal than middle of pectoral. Third anal spine shorter than rayed fin. Pectoral and ventral not "of equal size," former a little longer.

Color of dried skin plain straw-brown, fins and iris unmarked. About four narrow pale olivaceous longitudinal bands, narrower than spaces between, extending along each series of scales above lateral line. Below lateral line about six or seven faded or paler ones, but a little broader.

One example. Thornton Island, Polynesia. C. D. Voy. Presented by Prof. E. D. Cope.

Another example from Samoa.

FLAMMEO Jordan and Evermann.

Bull. U. S. Nat. Mus. (Fish N. Mid. Amer.), No. 47, III, 1898, p. 2, 871 (*marianus*).

Farer Forskål, Descript. Animal., 1775, p. 44 (*sammara*). [Uncertain.]

Flammeo achromopterus sp. nov. Fig. 6.

Holocentrus sammara Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 526. Samoa. (Dr. H. C. Caldwell.) (Not of Forskål.)

Head $2\frac{4}{5}$; depth $3\frac{1}{3}$; D. XI, 12; A. IV, 8; scales 41 in lateral line, last 3 on base of caudal; $3\frac{1}{2}$ scales obliquely back from origin of spinous dorsal to lateral line; 3 scales between middle of spinous dorsal and

lateral line; 7 scales obliquely forward from origin of spinous anal to lateral line; width of head $2\frac{1}{10}$ in its length; depth of head $1\frac{1}{2}$, over posterior margin of eye; mandible $1\frac{7}{8}$; first dorsal spine $2\frac{1}{2}$; third $1\frac{5}{8}$; third anal spine $1\frac{3}{4}$; first anal ray $1\frac{3}{4}$; least depth of caudal peduncle $4\frac{1}{8}$; pectoral $1\frac{3}{4}$; ventral $1\frac{2}{3}$; snout $4\frac{2}{5}$, measured from tip of upper jaw; eye 2; maxillary $2\frac{1}{3}$; interorbital space $4\frac{1}{3}$.

Body rather elongate, compressed, greatest depth near middle of depressed ventral, and upper profile a little more bent and convex than lower. Caudal peduncle compressed, least depth about half its length.

Head a little large, elongate, well compressed, upper profile obtusely

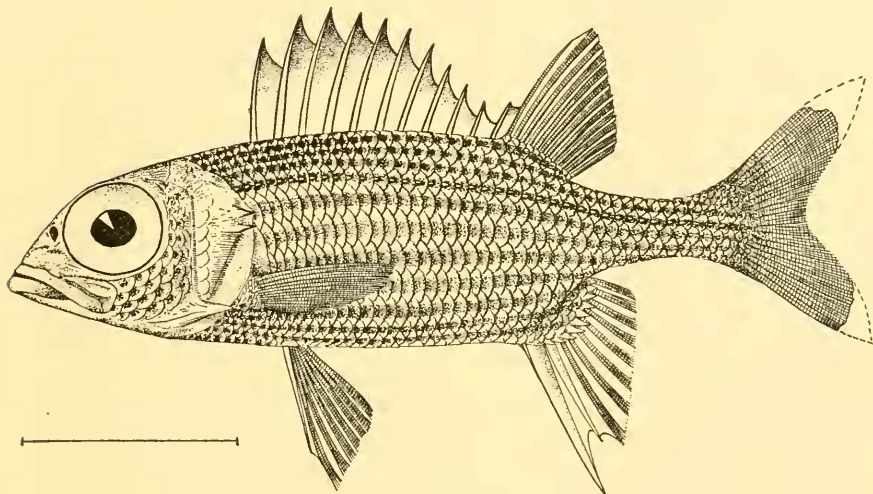


Fig. 6. *Flammeo achromopterus* Fowler.

convex, and lower but little convex. Snout short, convex, broad, upper jaw projecting a little, profile well inclined and straight. Eye rather large, nearly circular, anterior, and impinging on upper profile. Mouth rather small, mandible well protruding beyond upper jaw and gape reaching about front of posterior nostril. Maxillary rather large, slipping below narrow preorbital, and reaching below middle of orbit. Expanded end of maxillary equal to $\frac{3}{4}$ of horizontal diameter of pupil. Supplemental maxillary large. Teeth very small, in bands in jaws and on palatines, also a small triangular patch on vomer. Tongue long, slender, pointed and free. Nostrils adjoining, close in front and opposite middle of orbit, posterior a large pit. Interorbital space broad, and slightly concave. Bones of head mostly with finely den-

ticulate margins. Two opercular spines, upper a trifle larger and longer. A short broad preopercular spine equal to $\frac{2}{3}$ horizontal diameter of pupil. No spines in nostril or at end of nasal bone. Margin of preorbital well serrated.

Gill-opening extending forward till nearly opposite middle of orbit. Rakers iv 2+7 II, longest a trifle over half of horizontal diameter of pupil. Pseudobranchiae a little less than horizontal diameter of pupil, also a little longer than filaments.

Scales a little large, well imbricated, and finely denticulated, those on middle of side largest. Scales at base of spinous dorsal with small spines directed backward. Small scales crowded at base of soft dorsal. Base of anal scaly, and at middle rays well elongated and pointed. Small scales also on bases of pectoral and caudal. An enlarged scaly flap between bases of ventrals, also an enlarged axillary scale to each ventral. Four rows of scales on cheek, some on postocular region and occiput, and a single series of broad ones along posterior margin of preopercle. Lateral line with simple tubes, concurrent with dorsal profile at first, then extending a little high along side of caudal peduncle to middle of base of caudal.

Spinous dorsal inserted a trifle behind origin of pectoral, graduated to third spine which is longest, first and sixth of about equal size, and last much shorter than first, but also longer than penultimate. Margin of fin notched. Origin of soft dorsal nearly midway between middle of pectoral and base of caudal, and base of fin about $\frac{2}{3}$ its height. Anal inserted a trifle in advance, third spine enlarged, straight, longest, and reaching beyond longest anal ray to base of caudal if not a little beyond. Anterior anal rays longest, like those of soft dorsal. Caudal rather small, forked. Pectoral small, low, and not reaching as far as tip of ventral. Ventral inserted just behind base of pectoral, reaching about $\frac{2}{3}$ of distance to anal fin, first ray pointed, and spine equal to $\frac{5}{7}$ of fin.

Color in alcohol pale straw-brown. Four longitudinal series of narrow dark spots, one at base of each scale, above lateral line. Traces of about seven obscure pale longitudinal bands below lateral line. Fins with exception of marginal portion of spinous dorsal, which is pale dusky, plain pale brown like general body-color. Iris dull brassy-brown with a dusky blotch above.

Length $4\frac{1}{2}$ inches.

Type No. 14,141, A. N. S. P. Samoa. Dr. H. C. Caldwell.

This species is related to *Flammeo sammara* (Forskål), from which it differs, however, in the plain or immaculate fins.

(*A*, without; *χρῶα*, color; *πτέρον*, wing or fin.)